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Incomes from Owner-occupied Housing for Working-age and Retirement-age Canadians, 1969 to 2006

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by W. Mark Brown and Amélie Lafrance

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.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the Statistics Act
^{E}	use with caution
F	too unreliable to be published

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Abstract

Using data from the Survey of Household Spending and from its predecessor, the Survey of Family Expenditures, this paper investigates the relative incomes of retirement-age and working-age Canadians from 1969 to 2006, taking into account both explicit household income and the implicit income generated by owner-occupied housing. Over this 37-year period, the explicit incomes of retirement-age households increased at a more rapid pace than those of working-age households. Implicit income from owner-occupied housing also increased rapidly during this time, matching the rate at which the explicit income of retirement-age households increased. On average, this implicit source of earnings raised the incomes of retirement-age households (aged 70 and over) by 16%. Taking both forms of income into account, the incomes of retirement-age households (aged 70 and over), relative to the incomes of working-age households (aged 40 to 49), increased from 45% in 1969 to 59% in 2006. During this period, Canadians invested in housing assets that provided additional income upon retirement.

Executive summary

Housing policy is one of the keystones of social policy in Canada and a central pillar of this policy has been the encouragement of private investment in housing by Canadians. To date, most research related to this policy has focused on rates of home ownership. This paper extends this research agenda by asking how much income is generated by investment in owner occupied housing and to what extent this income contributes to the finances of working-age and retirement-age households.

An earlier paper by Brown, Hou and Lafrance (2010) asked whether home ownership adds significantly to the well-being of the retirement-age households in 2006. This paper investigates the contribution of home ownership to income between 1969 and 2006. Since 1969, Canada has gone through several decades that differed substantially in terms of overall economic growth, inflation, and mortgage rates. Using the Survey of Household Spending and its predecessor, the Survey of Family Expenditures, this paper examines how Canadians responded in terms of providing for their own well-being by investing in housing. It does so by investigating the amount of income that is generated by homeowners as a result of their investment in housing. It also examines how this investment in housing has affected the relative incomes of retirement-age and working-age Canadians between 1969 and 2006.

In 2006, implicit income from owner-occupied housing increased the household income of retirement-age households who owned their homes by between 10% and 15% (Brown, Hou, and Lafrance 2010). If the implicit returns to housing have risen over time, not taking into account the implicit income provided by owner-occupied housing would bias the estimates of changes in the relative incomes of working-age and retirement-age households.

The study finds that there has been a gradual increase in the relative economic well-being of the retirement-age households. Before accounting for home equity, from 1969 to 2006 the relative income ratio of households aged 70 and older to the 40-to-49 age class and the 50-to-59 age class increased by 15 and 8 percentage points, respectively.

During this period, Canadians invested in housing assets that provided additional income upon retirement. This implicit source of income from investments in housing increased income on average over the period by 13% and 16% for the 60-to-69 and 70-and-older age groups, respectively. Moreover, this percentage increase has risen over time. Thus, taking into account returns to equity built up in housing, further reduced the income gap between retirement-age and working-age households over the period.

Canadians, supported by housing policies that facilitated home purchases, have continued to invest steadily in home ownership over their lifetimes. As retirement incomes have increased relative to the incomes of working-age households, returns to home ownership have at least kept pace. As such, the gap in incomes between retirement-age and working-age households narrowed even further due to home ownership.

1 Introduction

Housing policy is one of the keystones of social policy in Canada and a central pillar of this policy has been the encouragement of private investment in housing by Canadians. To date, most research related to this policy has focused on rates of home ownership. This paper extends this research agenda by estimating the amount of income that is generated by investment in owner occupied housing and to what extent this income contributes to the finances of working-age and retirement-age households.

An earlier paper by Brown, Hou and Lafrance (2010) asked whether home ownership adds significantly to the well-being of retirement-age households in 2006. This paper investigates the contribution of home ownership to income between 1969 and 2006. Since 1969, Canada has gone through several decades that differed substantially in terms of overall economic growth, inflation, and mortgage rates. Using the Survey of Household Spending and its predecessor, the Survey of Family Expenditures, this paper examines how Canadians responded by providing for their own well-being by investing in housing. It does so by investigating the amount of income that is generated by homeowners as a result of their investment in housing. It also examines how this investment in housing has affected the relative incomes of retirement-age and working-age Canadians between 1969 and 2006.

The period from 1969 to 2006 encompasses much of the lifespan of the modern pension system in Canada, from the implementation of Old Age Security (OAS)/Guaranteed Income Supplement (GIS) in 1969 to the implementation of the Canada Pension Plan (CPP)/Quebec Pension Plan (QPP), which began paying out benefits to those over the age of 65 in 1976 (Myles 2000).

This was also an era of significant economic and social change. A new generation that came of age in the prosperous post-war years entered retirement, replacing a generation that had endured the Great Depression and the Second World War (WWII). The post-war generation experienced an era of prosperity that more readily facilitated the accumulation of assets (e.g., pensions, investments, and housing) than the era of their predecessors, who had lived through the difficult times of the depression in the 1930s and the Second World War. This was also an era that saw the transformation of the household as women entered the labour force. Unlike retirement-age households in 2006, retirement-age households in 1969 generally did not benefit from a second income through their working lives.

While the prosperity of the post-WWII era provided the opportunity to accumulate assets such as housing, events during this period provided challenges to the process of asset accumulation. The period was characterized by bouts of high inflation and high interest rates into the 1980s, followed by declining interest rates into the 2000s. All of this may have affected the relative earnings levels of retirees and the savings incentives of pre-retirees.

At issue is whether the importance of self-generated income from housing changed over time relative to income earned from other sources and how this affected the relative incomes of working-age and retirement-age households. Using data from the Survey of Household Spending (SHS) and from its predecessor, the Survey of Family Expenditures (Famex), this paper provides a perspective on long-term trends in retirement incomes. It asks whether the current retirement system has provided retirement-age households with incomes that are growing, compared to those of their working-age counterparts. In this paper, income includes not only the explicit incomes of retirement-age and working-age households, but also the implicit income provided by owner-occupied housing. In 2006, this implicit income increased the household income of retirement-age households who owned their homes by between 10% and 15% (Brown, Hou, and Lafrance 2010). If the implicit return to housing has risen over the 1969-to-2006 period, not taking into account the implicit income provided by owner-occupied housing

would bias the estimates of the changes in the relative incomes of working-age and retirement-age households over this time period.

The remainder of the paper is organized as follows. The analysis relies primarily on the SHS and the Famex. Therefore, the next section describes these data sources as they are applied to the problem at hand (Section 2). This is followed by an overview of the relative incomes of working-age and retirement-age households (Section 3). Section 4 describes the measurement of housing services and the implicit income from owner-occupied housing, and Section 5 provides a description of these estimates across house-value quintiles, including estimates of the implicit incomes generated by owner-occupied housing and their contribution to overall income levels for working-age and retirement-age households over the study period. Section 6 concludes the paper.

2 Data sources

The SHS and its predecessor, the Famex, contain detailed information on household income and expenditures in a given year. This paper covers the time period from 1969 to 2006, using the Famex for the years 1969 to 1996[1] and the SHS for the years 2001 and 2006, at intervals of between four and five years.[2]

Both surveys provide information on the reference person's income, his or her spouse's income, and total household income. They also include information on income deductions such as personal taxes and contributions to public and private pension plans. In the analysis, these deductions are taken into account in order to improve the comparability of working-age and retirement-age incomes.

In addition to incomes, both surveys provide information needed to estimate the value of housing services provided by the household's dwelling and the portion of those services that are paid for by the accumulation of equity in the home; that is, the implicit income resulting from this investment. Included in the Famex and the SHS are the dwelling's price[3] and expenditures made on the dwelling, which are required to estimate the value of housing services. The Famex also collects information on the balance that homeowners have owing on a mortgage. This information is necessary in order to calculate the home equity shares used to estimate the value of implicit income derived from owner-occupied housing. Because the 2001 and 2006 SHS do not ask for the balance owing on a homeowner's mortgage, the 1999 and 2005 Survey of Financial Security (SFS) are used to estimate home equity shares by household age class for these years.

The Famex and the SHS also include information on rented dwellings.[4] These include yearly rent along with associated expenditures such as utilities. These measures of rent are used to

1. The years covered by the Famex are 1969, 1974 (urban areas only), 1978, 1982, 1986, 1990 (urban areas only), and 1996.
2. While there is continuity in these surveys, analysts must always be cognizant that a particular year may offer less accuracy than others—either because the sample drawn for the survey of that year was less representative than the sample drawn for surveys of other years or because there were other problems that year. Comparisons across years such as presented here provide hindsight on potential incongruities.
3. Since the 2001 SHS includes only house and condominium values for households that bought and/or sold their homes in the reference year, self-reported house and condominium values are incorporated using the 2001 Census of Population. To do so, the median house values are obtained by census subdivision, further broken down by age class. The timing of the questionnaire for the 2001 SHS and the 2001 Census of Population are not the same; consequently, the self-reported housing value may not completely match the data in the SHS as a result of this lag.
4. The 1978 Famex does not contain this information.

impute rents for owner-occupied housing. Imputed rents provide an additional measure of housing services.

3 Relative incomes of working-age and retirement-age households

Household income generally increases with age as workers gain experience in the labour force. This relationship tends to become weaker over time, as the effect of experience on income dissipates and household members move out of the workforce and into retirement. The question at hand is whether the relative income of retirement-age households has been changing over time.

As noted in the introduction, the long-run effects of the macro-economy and the growing participation of women in the workforce, combined with declining real investment returns in the 1990s and 2000s, may have had an effect on the relative incomes of retirement-age and working-age households. Retired households in 1969 may not have been able to rely on the same level of assets available to subsequent generations, while households in the 2000s may have been confronted with decreasing real investment returns. These factors can all have an impact on household income structure over time.

Charts 1 and 2 present the incomes of the retirement-age population as a proportion of the incomes of two different working-age populations, households in the 40-to-49 age group and households in the 50-to-59 age group, respectively (see also Text table 1 in Appendix 1). The age classes are based on the age of each household's reference person. The ratios are presented using three measures of income: 1) gross income; 2) income net of income taxes; and 3) income net of income taxes and contributions, which include payments for employment insurance premiums, life insurance premiums, and contributions to public and private pension plans. The latter measure of income may be considered more appropriate when comparing the incomes available for consumption across household age cohorts since after retirement households no longer pay such contributions.

Since 1969, on average, incomes of the retirement-age population as a proportion of the incomes of the working-age population have increased.[5] This is the case regardless of the income measure or the working-age class used as a basis of comparison (see Charts 1 and 2). From 1969 to 2006, the relative income ratio of the 70-plus age class to the 40-to-49 age class increased by 13 percentage points for gross income and by 15 percentage points for income net of income taxes and contributions. For this group, the income ratio based on income net of income taxes and contributions rose from 0.41 to 0.56 when compared to households in the 40-to-49 age class. These results are consistent with those of other studies that have examined the relative incomes of the working-age and retirement-age populations: these studies have shown that the incomes of elderly households have been approaching those of non-elderly households over time (Myles 2000; Rubin, White-Means, and Mao Daniel 2000; Forster and Pearson 2002).

5. See Myles (2000) for a discussion of the relative contributions of private pensions, investment income, OAS/GIS, and CPP/QPP to the growth in incomes of the population above age 65 from 1980 to 1995.

Chart 1
Income ratios, 70-plus to 40-to-49 age classes, 1969 to 2006

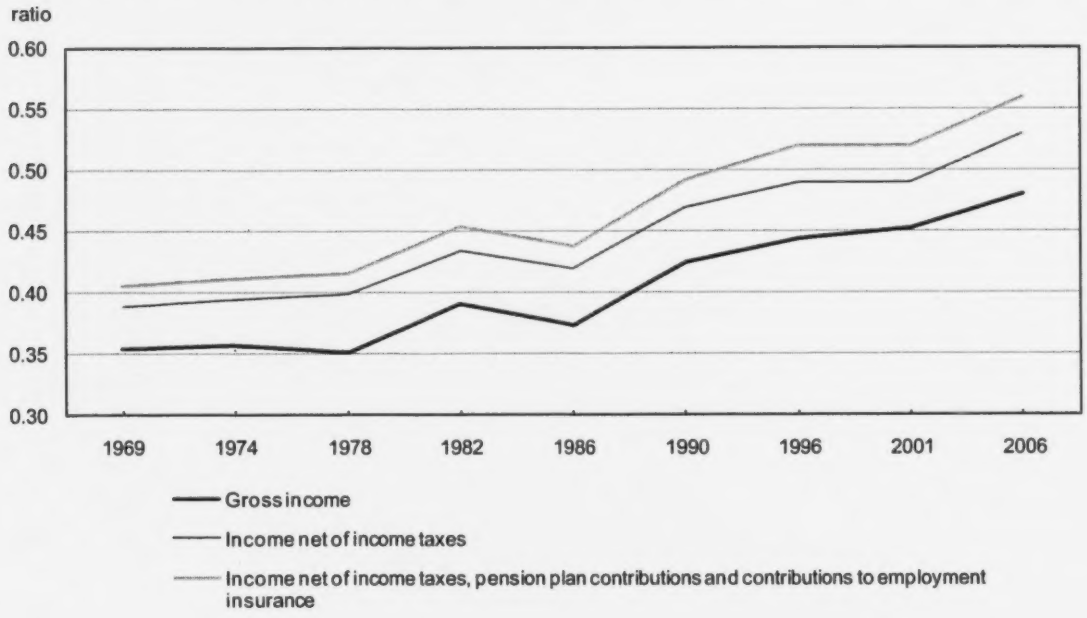
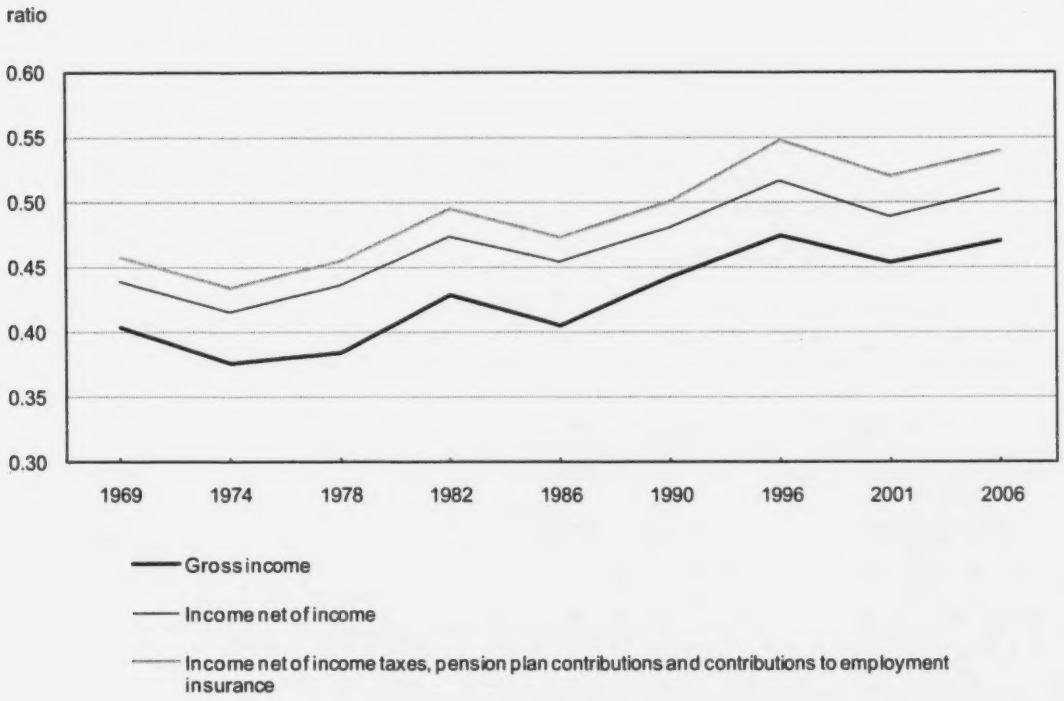


Chart 2
Income ratios, 70-plus to 50-to-59 age classes, 1969 to 2006

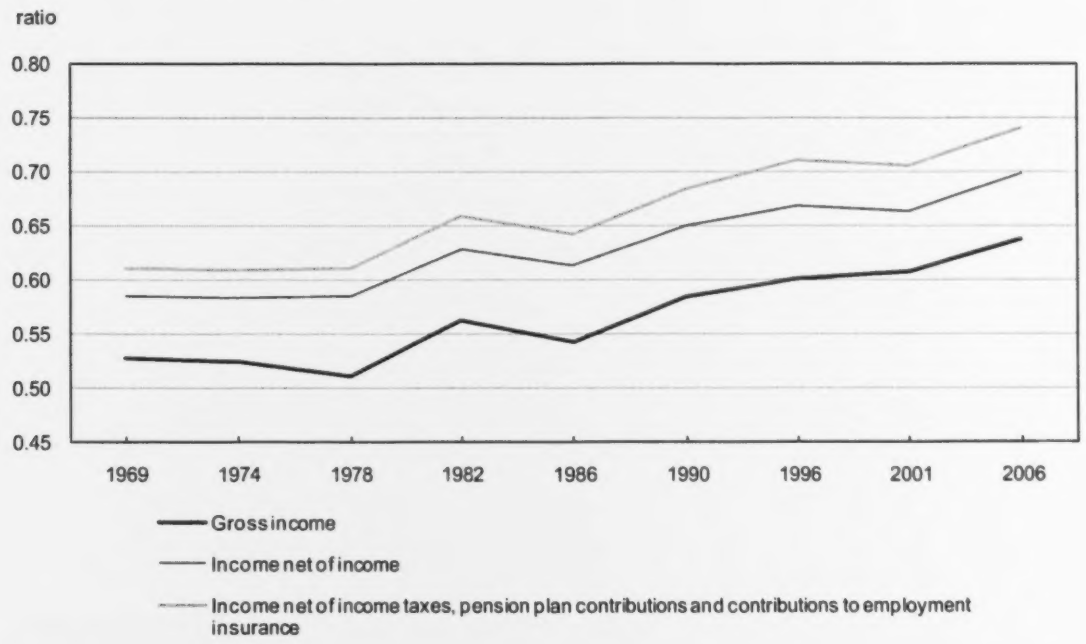


Typically, family size increases with the age of the household as families are formed, but declines in older age classes as children leave the home. When comparing incomes over time, it is also important to take into account family size because families were larger in the 1970s than they were in the 2000s.

Comparisons of income across families therefore sometimes take into account the number of members of a family. Generally, this is not done by simply dividing by the number of members in a family. It is argued that, as family size increases, the amount of consumption per household member declines; therefore, it may be important to take this apparent economy of consumption into account in comparing the incomes across differing age classes. As in Brown, Hou, and Lafrance (2010), this paper makes use of the OECD method of dividing income levels by the square root of the household size. The resulting ratios of the incomes of households over the age of 70 to the incomes of working-age households, based on the same three measures of income, are illustrated in Chart 3 (40-to-49 age class) and Chart 4 (50-to-59 age class) (see also Text table 1 in Appendix 1).

The resulting income ratios at each point in time are higher than those not accounting for household size. For instance, in 2006, net income less contributions of households in the 70-plus age class relative to net income less contributions of households in the 40-to-49 age class was 0.74, or almost 20 percentage points higher than it would be if household size were not taken into account. However, the trends in relative income over time are similar to those that do not adjust for household size (see Charts 3 and 4). Hence, while accounting for household size further reduces the differences in income between the working-age and retirement-age population, the conclusion that the gap in income between retirement-age and working-age households fell over this period remains unaltered.

Chart 3
Income ratios adjusted for household size, 70-plus to 40-to-49 age classes, 1969 to 2006

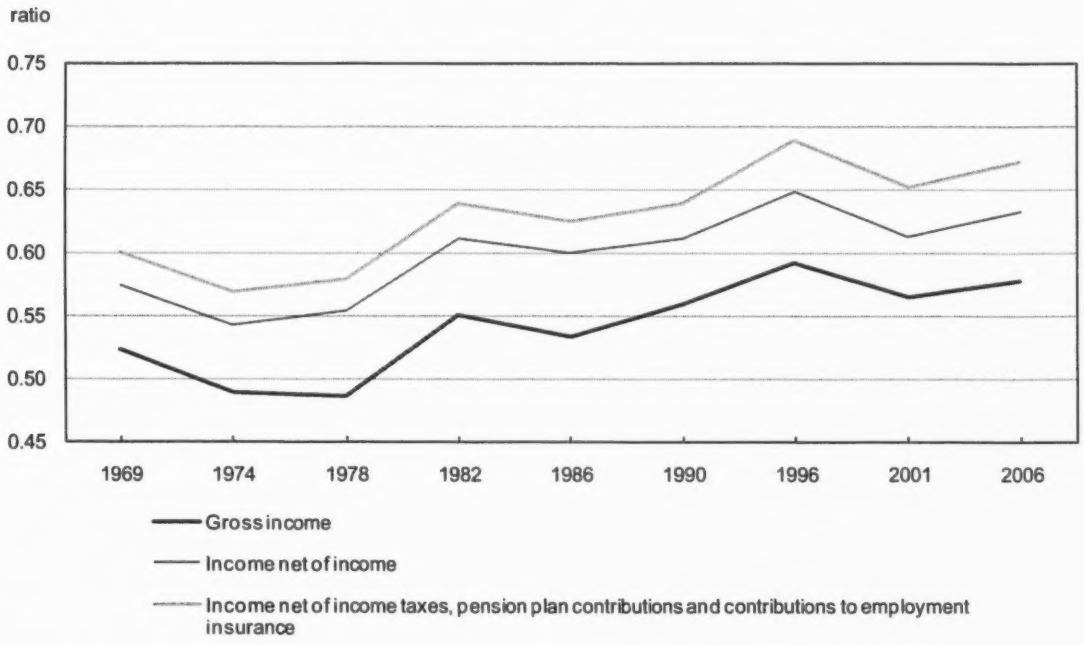


Regardless of the measure of income or of the adjustments made for household size, the incomes of retirement-age households increase over time relative to those of working-age

households. As the generation that entered the workforce during the Great Depression is replaced by households that spent their working lives during the post-war boom, the relative incomes of retirement-age households has increased; this suggests, in part, a difference in the accumulated wealth of these households.[6] This is consistent with the outcomes of generations that experienced very different macro-economic environments and the transition from single-earner to duel-earner households. It is also noteworthy that it is not apparent in these income measures that declining real investment returns in the 1990s and 2000s have had a significant effect on the relative incomes of retirees in 2006. That is, it appears that lower investment returns have been compensated by greater accumulation of assets and/or the cushioning effect of pension plans of various types.

While the income measures presented to this point in the analysis provide a picture of the relative incomes of retirement-age and working-age households over an extended period of time, they present only a partial picture. The implicit income derived from owner-occupied housing may be rising over time, increasing further the relative incomes of retirement-age households. The remainder of the paper addresses this question.

Chart 4
Income ratios adjusted for household size, 70-plus to 50-to-59 age classes, 1969 to 2006



4 Estimating the value of housing services

Owner-occupied housing provides an important source of implicit income for retirement-age households (Brown, Hou, and Lafrance 2010). In order to measure the implicit income from owner-occupied housing, it is necessary first to estimate the value of housing services provided by the home. There are two related ways to value these housing services—via the user cost of

6. For instance, Myles (2000) finds that private pension plans accounted for an increasing share of seniors' incomes from 1980 to 1995.

capital and the equivalent imputed rent. The user cost of an asset can be thought of as the price that the owner of the asset would demand in order to rent out the asset. It is equal to the opportunity cost of the funds used to purchase the asset, the cost of depreciation incurred over the length of time that the asset is rented, and any taxes on the asset, minus the expected appreciation in the value of the asset.

In more formal terms, the value of capital services *C* provided by a dwelling at time *t* is given by

$$C_t = (r_t + z_t - a_t) P_t = R_t, \tag{0.1}$$

where *P* is the price of the dwelling; *r* is the rate of return to capital; *z* is depreciation, maintenance, insurance, and property taxes; *a* is the expected appreciation in the value of the dwelling in year *t;* and *R* is rental services. User cost is therefore defined as the opportunity cost of capital plus the out-of-pocket cost that the owner incurs (i.e., taxes, insurance, maintenance, and depreciation), less the expected increase in the asset's value.

The user-cost-of-capital approach and the equivalent imputed rent both have advantages and disadvantages. The user-cost-of-capital approach is theoretically attractive and is used extensively in the productivity literature for valuing the capital services provided by an asset (see Baldwin and Gu 2007). However, this method requires estimates of the expected rate of asset price appreciation (*a*) and estimates of the rate of return on capital (*r*), each of which is subject to measurement error.

Measuring imputed rent is not without challenges as well. Imputed rents are derived from hedonic estimation techniques that relate rental prices to the characteristics of dwellings. These estimates can be sensitive to omitted-variable bias (Malpezzi 2002). Moreover, because rental markets can be relatively thin for more expensive dwellings (Brown, Hou and Lafrance 2010), it is often difficult to obtain accurate estimates of imputed rents for some households.

In theory, both methods are expected to provide the same value of housing services when resources can be shifted between the two—since, if rents differ from the implicit user costs of housing, arbitrage is likely to occur. While some U.S. studies have found that the two measures tend not to equate (see Garner and Verbrugge 2009), in Canada, Brown, Hou, and Lafrance (2010) find that the user-cost and imputed-rent measures of the value of housing services in 2006 approximate one another for dwellings whose values fall in the middle quintile.

As a result, the value of housing services is estimated in the paper by means of the user-cost-of-capital approach, but information is incorporated based on imputed rents estimated at the median house-value quintile. In Brown, Hou and Lafrance (2010) plausible assumptions about the rate of return and the anticipated rate of appreciation in house values produced estimates of housing services based on the user cost that were quite similar to the rental equivalent at the median housing value. The measures of housing services based on the user cost of capital and on imputed rents, however, differed for more expensive homes for which rental markets are thinner. User cost is therefore employed to approximate housing income across all quintiles. A discussion follows of the methodology for estimating imputed rents and the rate of return on capital that is utilized for the user-cost formula.

4.1 Imputed rents

To measure rental services, a hedonic pricing model that relates rental prices to the characteristics of the dwelling is used and applied to impute rental values to all owner-occupied housing. The model is estimated for each year and includes variables that control for the quality of the dwelling and location.

Following Brown, Hou, and Lafrance (2010), the semi-log hedonic rent model is specified as:

$$\ln(rent)_{it} = \alpha + \boldsymbol{\beta}'\mathbf{rooms}_{it} + \boldsymbol{\delta}'\mathbf{bathrooms}_{it} + \boldsymbol{\gamma}'\mathbf{type}_{it} + p_{it} + \varepsilon_{it}, \quad (0.2)$$

where *rent* is the value of annual rent payments that the renter incurs, which includes utilities (i.e., water, electricity, and fuel). The variables that measure the quality of the dwelling include *number of rooms*, *number of bathrooms,*[7] and *type of dwelling*. Quadratic terms for the number of rooms and the number of bathrooms are also included. The variable that takes into account the location of the dwelling is the province in which the dwelling is located (*p*).[8] The sample is restricted to those households who have rented and occupied their dwelling for 12 months. The results are shown in Table 1.

As expected, annual rents are higher when units have more rooms (Table 1). The number of bathrooms is also positively associated with higher rents, although this variable is statistically significant only in 1990 and 2006. In most years, units in apartment buildings will have higher rents than other types of dwellings, even single detached homes. Apartment buildings are usually more centrally located in cities than single detached homes. This may account for their higher rents after accounting for other characteristics of the dwelling.

The predicted values from each model are used to calculate imputed rents for owner-occupied housing.[9] To ensure consistency with user-cost-based measures of housing services, services provided by landlords are deducted from imputed rents. That is, expenditures on utilities (i.e., water, fuel, and electricity), as well as the cost of other services provided by landlords (i.e., janitorial services, parking, and depreciation on furniture and appliances), are deducted.

To estimate imputed rent net of services provided by landlords, or space rent, information from the Famex/SHS and the National Accounts is used. The Famex and the SHS are used to measure the value of utilities in imputed rent. To do so, the utility share of imputed rent for owner-occupied dwellings other than apartments is calculated. Owner-occupied apartments are treated separately. The mean of these shares is taken across provinces and multiplied by imputed rent to obtain a measure of the level of utilities for each owner-occupied dwelling. This value is then subtracted from imputed rent to obtain space rent.

Owner-occupied apartments consist mostly of condominiums, whose fees tend to include utilities. As a result of this potential bias, the utility share of owner-occupied apartments that might be calculated from the Famex (and from the SHS) is not usable. Instead, the ratio of the utility share of rents for rental apartments to the utility share of utilities for other rented dwellings is taken and multiplied by the utility share of owner-occupied dwellings (other than apartments) to obtain a utility share for owner-occupied apartments. This result is multiplied by imputed rent to obtain a measure of the level of utilities expenditures; the latter is then subtracted from imputed rent.

Imputed rent for apartments is further adjusted by subtracting expenditures on janitorial services and parking, as well as depreciation on furniture and appliances. These adjustments are derived

7. The 1969 and 1974 Famex do not include the number of bathrooms in the home.
8. The model does not include a variable that controls for size of the urban area of the dwelling because the definitions of area size were not consistent over time and no such variable was present in the 1990 Famex. To test the sensitivity of the estimates to the inclusion of size of urban area, it was included in the 1982, 1986, and 1996 models. In comparison to the original estimates, the outcomes were very similar; therefore, in order to be consistent over time, the model does not include a variable that controls for size of the area.
9. The imputed rents reported herein are corrected in order to take into account the log-linear nature of the model. This correction does not have a qualitative effect on the results. It is not made in Brown, Hou and Lafrance (2010), which relied primarily on the user cost-based measure of housing services.

from the National Accounts on a national basis.[10] For other types of dwellings (e.g., detached residences), these adjustments are not made, because imputed rents are unlikely to include these costs (e.g., janitorial services).

Table 1
Yearly rent as a function of rental dwelling characteristics and location, 1969 to 2006

	1969	1974	1982	1986	1990	1996	2001	2006
Variables								
Constant								
coefficient	6.14	6.67	6.97	7.39	7.65	7.78	8.02	7.92
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of rooms								
coefficient	0.37	0.28	0.34	0.31	0.21	0.29	0.22	0.22
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of rooms squared								
coefficient	-0.03	-0.02	-0.02	-0.02	-0.01	-0.02	-0.01	-0.01
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of bathrooms								
coefficient	.	.	0.12	0.19	0.54	0.23	0.21	0.53
p-value	.	.	0.279	0.262	0.000	0.192	0.172	0.003
Number of bathrooms squared								
coefficient	.	.	0.03	0.03	-0.10	0.01	0.01	-0.10
p-value	.	.	0.417	0.629	0.022	0.903	0.798	0.061
Dwelling type (excluded category = apartment)								
Single detached								
coefficient	-0.36	0.03	-0.24	-0.20	0.07	-0.16	-0.06	-0.04
p-value	0.000	0.373	0.000	0.000	0.149	0.000	0.055	0.246
Semi-detached								
coefficient	-0.20	0.11	-0.07	-0.03	-0.01	-0.14	-0.03	-0.02
p-value	0.000	0.006	0.092	0.760	0.889	0.013	0.558	0.686
Row house								
coefficient	-0.11	-0.11	-0.12	-0.08	-0.16	-0.15	-0.19	-0.07
p-value	0.000	0.003	0.011	0.018	0.001	0.000	0.000	0.155
Duplex								
coefficient	-0.10	-0.03	-0.02	-0.11	-0.02	-0.09	-0.10	-0.02
p-value	0.000	0.204	0.570	0.050	0.605	0.003	0.002	0.613
Rooms and moveable dwellings								
coefficient	-0.55	-0.31	-0.15	-0.36	0.05	-0.01	-0.13	-0.18
p-value	0.000	0.000	0.014	0.001	0.694	0.812	0.149	0.070
Diagnostic statistics								
Number of observations	5,210	3,142	4,019	3,914	1,822	3,492	4,887	4,054
R-squared	0.372	0.345	0.233	0.271	0.235	0.223	0.216	0.172
Root mean squared error	0.489	0.406	0.509	0.458	0.410	0.451	0.496	0.493

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

4.2 User cost

To derive the parameters used to value housing services across all house values, the values of the user costs are set equal to the estimated hedonic rental values at the median housing value,

10. Detailed information is included only post-1992. However, the costs as a share of contract rents do not vary much over time. Consequently, for the years prior to 1992, a constant share is applied.

using the formulæ in (0.1). The difference between the nominal rate of return and the expected rate of price appreciation can then be solved for:

$$r_t - a_t = \frac{R_t}{P_t} - z_t. \tag{0.3}$$

As imputed rents and user cost estimates of the value of housing services tend to equate for homes that fall into the middle (q_3) house-value quintile (see Brown, Hou, and Lafrance 2010), $r_t - a_t$ is estimated on the basis of the average values of the known imputed rent (R_t), out-of-pocket costs (z_t), and home values (P_t) for the middle house-value quintile:[11]

$$r_t - a_t = \frac{R_t^{q_3}}{P_t^{q_3}} - z_t^{q_3}. \tag{0.4}$$

The estimate of out-of-pocket costs, the *z* term in Equation (0.1), includes other costs generally associated with the provision of housing space services in rental markets; these costs include depreciation, insurance, repairs and maintenance, and property taxes. All costs are derived from the Famex and the SHS, and reported as a proportion of the average house value for the years from 1969 to 2006 (Table 2). Insurance is measured by homeowners' insurance premiums. Insurance and property taxes as a proportion of the average house value have been relatively constant over time, although property taxes relative to house prices were fairly high in 1969.

Table 2
Average out-of-pocket costs as a percentage of the average house value, 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					percent				
Insurance	0.23	0.22	0.26	0.43	0.42	0.28	0.40	0.41	0.26
Property tax	1.79	1.27	1.14	1.40	1.34	1.25	1.48	1.47	0.78
Repairs and maintenance	1.56	1.08	1.90	0.88	0.83	0.57	0.68	0.74	0.23
Depreciation									
Improvements and alterations	0.77	0.57	1.14	1.75	1.54	1.19	1.11	1.35	1.70
Long term structural deterioration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Total depreciation	1.27	1.07	1.64	2.25	2.04	1.69	1.61	1.85	2.20

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

Out-of-pocket costs also include repairs and maintenance, and depreciation. Repairs and maintenance[12] expenditures are household expenditures that maintain or restore the condition of the property to its original state but are not meant to add value to the home. Examples of such expenditures include painting, repairs to heating systems, and re-roofing. These expenditures have generally been lower post-1978. These ratios are multiplied by the value of each house, by dwelling type, to provide an estimate of annual maintenance expenditures.

11. Since rental values are not available in the 1978 Famex, $r_t - a_t$ is obtained in 1978 by taking the average $r_t - a_t$ from 1974 to 1982.
12. For condominiums, a portion of repairs and maintenance is included in condominium fees. Therefore, 10% of condominium fees are added to expenditures on repairs and maintenance, except for the years 1969 to 1978, for which condominiums cannot be identified.

Depreciation consists of two components. The first and most important component is improvements and alterations to the home,[13] which is reported in both the Famex and the SHS. Improvements and alterations are defined as expenditures made to increase the value and useful life of the property, and thus are closely tied to the definition of depreciation. This category includes expenditures resulting from required maintenance due to depreciation (e.g., replacing aging windows) and expenditures on improvements that, while they involve a form of upgrading, are really a component of depreciation, because structures are not only exposed to wear and tear but also are subject to changing standards. If improvements are not made to a property in order to bring it into line with prevailing standards, its value will fall behind that of comparable neighbouring properties as a result of obsolescence. Just like physical depreciation, obsolescence must be recaptured by a renter of capital and therefore should be included in the user cost of capital.

Since different types of dwellings depreciate at different rates, and given that expenditures on improvements and alterations will vary by type of dwelling, these expenditures are calculated as a share of the price of the home and then averaged across dwelling types. This share is then multiplied by the value of each dwelling, by dwelling type, to obtain an estimate of the annual value of depreciation.

The second component of depreciation is the long-term structural deterioration of the home. This additional contribution to the depreciation rate is set to 0.5% of the value of the dwelling and is assumed to be constant over time.

As a proportion of the average house value, improvements and alterations have been variable but have tended to decrease from 1982 to 1996. The average rate of total depreciation over the period was 1.74% (see Table 2). Harding, Rosenthal, and Sirmans (2007) find that depreciation gross of maintenance in the U.S. from 1981 to 2001 averaged around 2.5%. The average depreciation, gross of maintenance, obtained here is comparable: 2.6% over a similar period (1982 to 2001).

It should also be noted that there may well have been periods when rental markets did not reflect the true cost of housing services—even at the median value of housing—and that this drove the implied real rate being earned, as calculated using the methodology employed here, below its long-term average. Rent controls have existed in some Canadian markets over this period (Arnott 1995), and their severity in driving rental prices away from their opportunity costs may well have changed over time. If this were the case, our estimates of income derived from housing would be biased downward. This paper makes no attempt to integrate this effect into the analysis.

5 Value of housing services, trends in home equity, and implicit income from owner-occupied housing

The implicit income provided by owner-occupied housing significantly increased the household income of the retirement-age population in 2006 (Brown, Hou, and Lafrance 2010). The question addressed here is whether this was generally the case over a long time period. Changing economic conditions may have substantially influenced home ownership rates over time and the resulting accumulated equity that households have invested in their homes. In this section, estimates of housing services, trends in home equity, and estimates of the implicit

13. For condominiums, a portion of expenditures on improvements and alterations are included in condominium fees. Therefore, 30% of condominium fees are added for improvements and alternations, except for the years 1969 to 1978, for which condominiums cannot be identified.

income generated from owner-occupied housing across age classes are examined over the period from 1969 to 2006.

Using the derived measure of the difference between the rate of return to capital and the expected appreciation in house prices, the value of housing services is estimated across house-value quintiles for the period from 1969 to 2006 by means of the user-cost approach (Table 3). Following the trend in home values, the user-cost estimates (in nominal dollars) increase over most of the period, declining only from 1990 to 1996, and recovering by 2001.[14]

Table 3
Average annual value of housing services by house value quintiles (estimates based on user cost and imputed rents), 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					dollars				
Quintile 1	307	1,197	936	1,397	1,712	3,855	3,056	4,399	3,897
Quintile 2	599	1,727	1,673	2,111	2,836	5,462	5,009	6,490	6,492
Quintile 3	873	2,011	2,115	2,713	3,668	6,919	6,391	7,900	8,703
Quintile 4	1,074	2,537	2,732	3,461	4,690	8,954	8,318	9,628	11,642
Quintile 5	1,539	3,783	4,171	5,337	8,200	15,331	14,305	14,992	22,193
Mean across quintiles	878	2,251	2,325	2,538	3,566	7,159	6,399	8,682	10,585

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

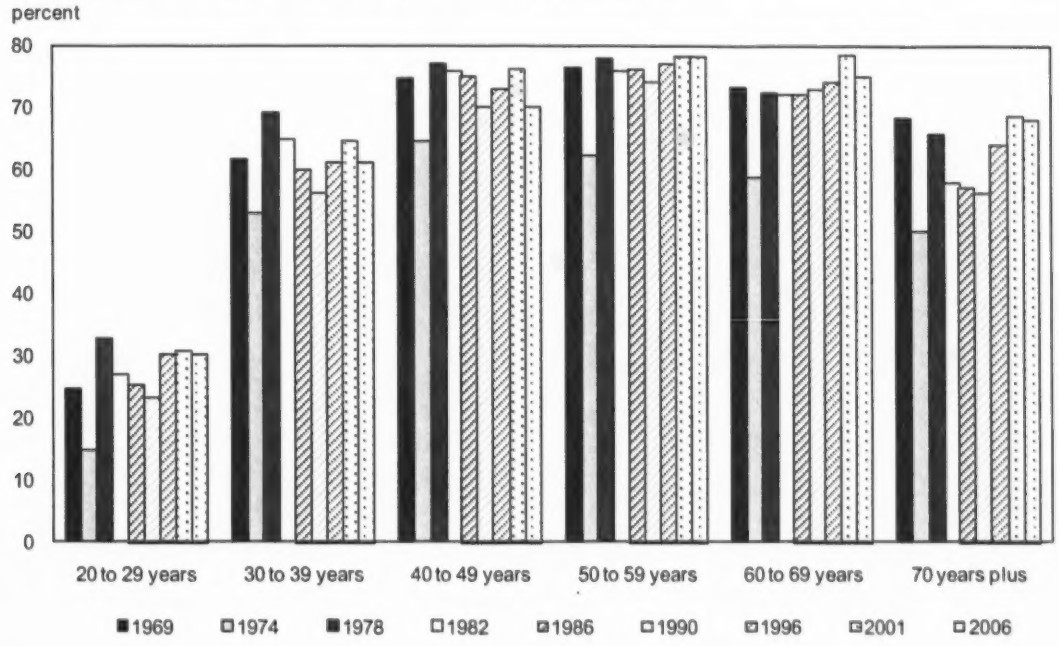
Over a span of 37 years, there may have been changes in housing tenure compositions and in the level of equity that households have invested in their homes. Changing equity shares, in turn, might account for a proportion of any changes in the implicit income derived from home ownership. Charts 5 to 7 present household home ownership rates, the proportion of homes owned with a mortgage, and the average equity share across age classes from 1969 to 2006, respectively.

The trends in home ownership rates over time and across age classes are similar to those presented in Hou (2010). In 1969, 25% of households in which the reference person was aged 20 to 29 owned their own homes (Chart 5). This share is 75% for households in the 40-to-49 age class. In 1974, home ownership rates for households in the 20-to-29 age class were particularly low but have been above 20% since that year. Over time, there was no significant variation in these tenure compositions, but the proportion of households owning their homes was generally higher in 2001 across all age classes.

Of those households that do own a home, the proportion of those that have a mortgage falls with age (Chart 6). In all years except 1969, between 78% and 89% of those aged 20 to 29 have a mortgage. This proportion drops to 25% or less by the ages of 60 to 69. As in the case of tenure composition, the proportions are similar over time across age classes. It is noteworthy that the proportion of mortgage holders among households in the 20-to-29 age class in 1969 is much lower than the proportion of mortgage holders belonging to this age group in other years; this may have been due to low house prices, low interest rates, or intergenerational transfers in 1969.

14. Since the 1990 Famex only surveyed households living in urban areas, the value of housing services may be biased upward in that year since house prices, on average, tend to be higher in urban locations.

Chart 5
Home ownership rates by age class, 1969 to 2006

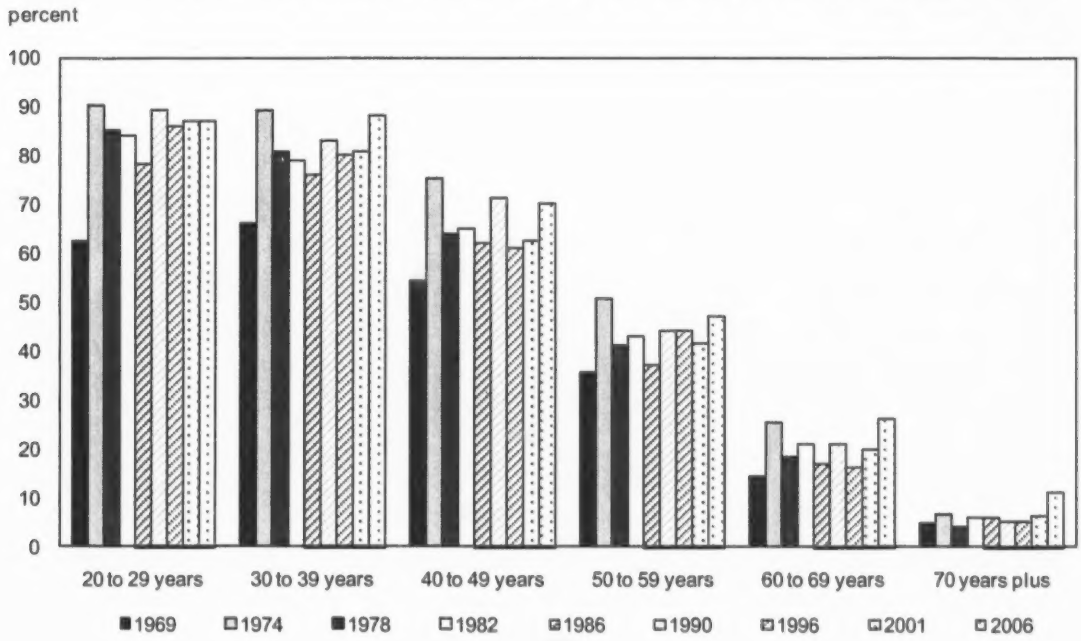


The Famex (1969 to 1996) collects information on the balance that homeowners have owing on a mortgage. This measure can be used directly to compute equity shares by age class with respect to homeowners with a mortgage and homeowners without a mortgage (households in the latter group have no balance owing on their mortgage and thus have a 100% equity share). The 2001 and 2006 SHS do not collect this information. Instead, the 1999 and 2005 Survey of Financial Security (SFS) are used, respectively, to calculate equity shares by age class. Since the proportion of homeowners with a mortgage decreases with age, one would expect equity shares to increase with age. This is in fact the case for all years (Chart 7). Shares rise from a low of 30% for the youngest age class (in 2001) to close to 100% for the oldest age class in all years.

Equity shares have not remained constant over time. They have generally decreased from 1969 to 2006. In 1969, the equity share of households in the 20-to-29 age class was 63%; this share becomes half that figure, 30%, for this same age group in 2001. These high equity shares in 1969 are due mostly to the group of households that do not have a mortgage in that year. However, until 1986, equity shares of households in this age group generally remained over 50%, with the exception of 1978. Over this period, working-age households benefited from rising wages. As a result, households in the 1970s and early 1980s may have been putting larger down payments on their homes than households did in the 1990s and even in the 2000s.[15] This pattern is also consistent with households paying off their mortgages more quickly at an earlier age in response to higher interest rates at the time.[16]

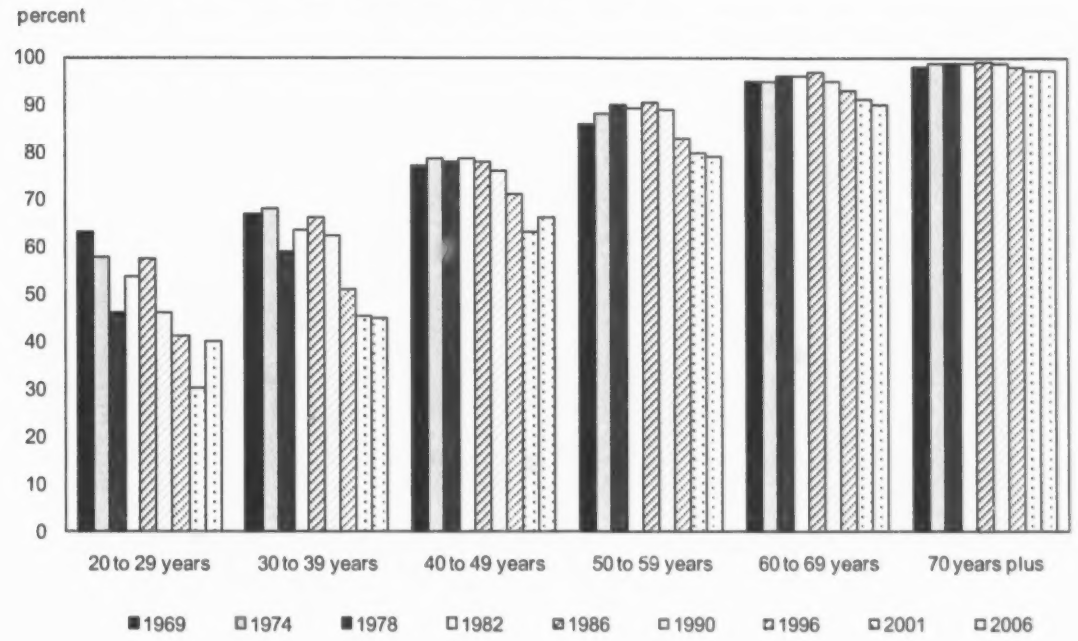
15. This conclusion is expressed with caution because definitions and changes in survey practices may have contributed to these changes.
16. See Courchane and Giles (2002) for a more in-depth discussion of trends in the Canadian and U.S. mortgage markets.

Chart 6
Proportion of homeowners with a mortgage across age classes, 1969 to 2006



In examining the equity share of households in the 40-to-49 age class, a sharp decrease is also observed from 1982 to 2006, from 79% to 66% (although the lowest value is for 2001). This finding could be due to falling interest rates over the period, which led households to pay off their mortgages more slowly. Another possible explanation is that households bought larger and more expensive homes in the 2000s, more so than in the 1980s.

Chart 7
Equity shares across age classes, 1969 to 2006



The estimated user costs and the derived equity shares are used to calculate the implicit income generated by home ownership. This additional income is added to the income of homeowners, net of taxes and other deductions. This prompts the following questions: how much more income is generated by home ownership; has the size of this income changed over time; and, to what extent has this income affected the relative incomes of the retirement-age and the working-age population, adjusted for returns to equity? Tables 4 and 5 include these statistics for all households and homeowners, respectively, across age classes over time. Returns to equity are defined as the user-cost-based value of housing services[17] multiplied by the equity share across age classes.

As in Brown, Hou, and Lafrance (2010), returns to equity increase with age but typically fall off for the oldest age classes. For all households—homeowners and renters—returns to equity increase until ages 50 to 59 from 1974 to 1986, but increase until ages 60 to 69 post-1990. Returns to equity also increase up to 1990 and drop post-1990 following the fall in house prices. They rise up again in 2006.

17. Here estimates of returns to equity take into account only the opportunity cost of capital plus repairs and maintenance as well as depreciation, less the expected appreciation in house prices.

Table 4
Average net annual household income and returns to equity for all households, by age class, 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					dollars				
Panel A: Returns to equity									
20 to 29	70	160	230	275	362	483	749	288	659
30 to 39	206	658	761	860	1,150	1,982	1,750	1,175	2,155
40 to 49	290	987	1,166	1,368	1,932	3,703	2,965	2,200	3,665
50 to 59	282	1,053	1,273	1,489	2,187	4,370	3,520	2,806	5,086
60 to 69	250	929	1,106	1,342	1,974	4,770	3,629	2,917	5,426
70 plus	191	735	936	1,008	1,274	3,180	2,828	2,214	4,316
Panel B: Net income plus returns to equity									
20 to 29	6,545	10,124	14,368	20,514	23,367	30,584	32,321	33,716	41,069
30 to 39	7,768	13,229	18,460	26,454	30,636	39,454	42,432	47,115	57,971
40 to 49	8,601	14,890	20,566	30,260	37,432	47,684	48,801	52,232	64,304
50 to 59	7,634	14,220	18,969	28,032	35,016	47,655	46,988	52,766	67,300
60 to 69	5,640	10,066	13,296	19,973	25,530	37,834	36,024	36,315	48,524
70 plus	3,559	6,448	8,986	14,139	16,797	24,845	26,665	28,231	38,119
					ratio				
70 plus: 40 to 49	0.41	0.43	0.44	0.47	0.45	0.52	0.55	0.54	0.59
70 plus: 50 to 59	0.47	0.45	0.47	0.50	0.48	0.52	0.57	0.54	0.57

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

Table 5
Average net annual household income and returns to equity for homeowners, by age class, 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					dollars				
Panel A: Returns to equity									
20 to 29	310	910	713	903	1,351	2,130	2,168	1,758	2,400
30 to 39	381	1,179	1,417	1,301	1,927	3,735	2,939	3,007	3,751
40 to 49	467	1,422	1,556	1,735	2,623	5,386	4,291	4,345	5,384
50 to 59	465	1,559	1,682	1,907	2,877	5,903	4,595	5,513	6,596
60 to 69	481	1,496	1,568	1,810	2,790	6,478	4,931	5,806	7,279
70 plus	412	1,482	1,429	1,664	2,349	5,971	4,403	5,355	6,391
Panel B: Net income plus returns to equity									
					dollars				
20 to 29	7,494	15,147	18,058	26,777	31,174	44,124	45,623	48,470	59,274
30 to 39	8,497	15,803	20,828	30,002	35,812	48,973	51,901	59,625	72,642
40 to 49	9,277	16,756	22,632	33,159	42,133	57,197	57,235	65,221	76,326
50 to 59	8,306	16,832	20,778	31,570	39,890	54,805	54,409	62,875	76,687
60 to 69	6,250	12,463	14,629	22,607	30,012	43,911	41,360	43,594	56,853
70 plus	4,151	8,419	10,011	15,934	20,175	33,623	30,893	35,256	44,734
					ratio				
70 plus: 40 to 49	0.45	0.50	0.44	0.48	0.48	0.59	0.54	0.54	0.59
70 plus: 50 to 59	0.50	0.50	0.48	0.50	0.51	0.61	0.57	0.56	0.58

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

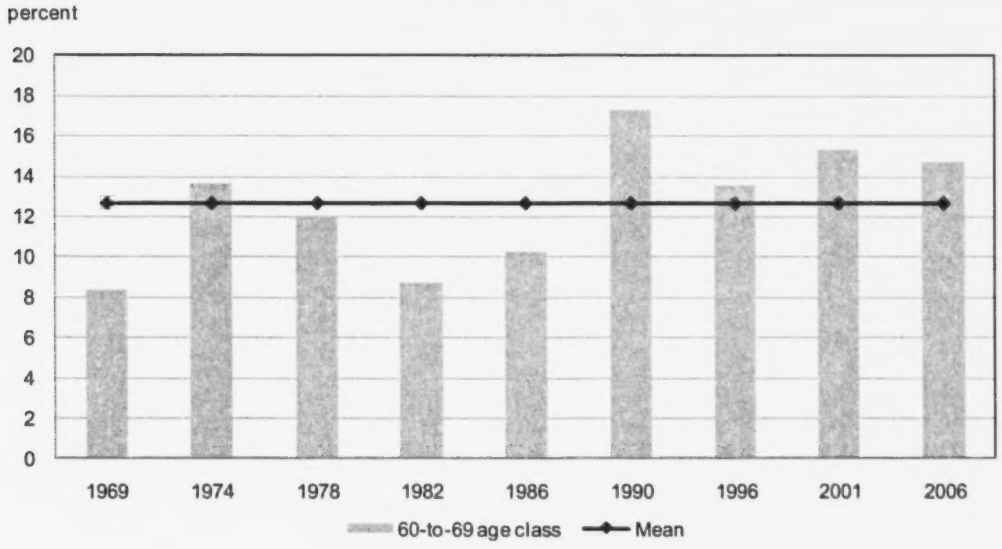
Housing services generate an extra 13% in income over this period for those in the 60-to-69 age group who were homeowners (Table 6). This rate rose through time, averaging 11% from 1969 to 1986 and rising to 15% from 1990 to 2006 (Chart 8). The income of homeowners in the 70-plus age group also grew, by some 16%. This group also saw an increase in this rate over time. This pattern of increases is present for most age classes (Chart 9).

Table 6
Percent increase in income due to housing equity, by age class, 1969 to 2006

Age class	Year									All
	1969	1974	1978	1982	1986	1990	1996	2001	2006	
	percent									
20 to 29	4.3	6.4	4.1	3.5	4.5	5.1	5.0	3.8	4.2	4.5
30 to 39	4.7	8.1	7.3	4.5	5.7	8.3	6.0	5.3	5.4	6.1
40 to 49	5.3	9.3	7.4	5.5	6.6	10.4	8.1	7.1	7.6	7.5
50 to 59	5.9	10.2	8.8	6.4	7.8	12.1	9.2	9.6	9.4	8.8
60 to 69	8.3	13.6	12.0	8.7	10.2	17.3	13.5	15.4	14.7	12.6
70 plus	11.0	21.4	16.7	11.7	13.2	21.6	16.6	17.9	16.7	16.3

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

Chart 8
Increase in income due to housing equity, 60-to-69 age class



Adding returns to equity to the net income of households reduces the income gap between retirement-age and working-age groups by a modest amount. Charts 10 and 11 plot the relative income ratios of retirement-age homeowners to homeowners in the 40-to-49 age class and to homeowners in the 50-to-59 age class, respectively, over time, using net income and net income plus returns to equity, along with the difference between the two ratios. On average, accounting for returns to equity increases the ratio of the income of those aged 70 and over to the income of those aged 40 to 49 by about 4 percentage points. This ratio is particularly high from 1990 to 2006, when homeowners aged 70 and over see an increase in their implicit income of 18%, on average, once returns to equity are taken into account (Table 6).

These estimates can also be generated by taking into account household size. In Tables 7 and 8, returns to equity are calculated for all households and homeowners, respectively, using the methodology outlined in Section 3. For all households, returns to equity increase until ages 60 to 69 in all years. However, for homeowners, returns to equity increase monotonically with the age of the household in most years, after taking into account household size.

More importantly, after controlling for household size, the relative incomes of households aged 70 and older increase by about 20 percentage points when one compares their incomes to those of households aged 40 to 49. Since the percentage increase due to housing grows slightly over time and the income of this group relative to that of the working-age groups is itself increasing, housing income accounts for a more than proportionate increase in the relative well-being of the retirement-age households.

Chart 9
Increase in income due to home ownership, by age class

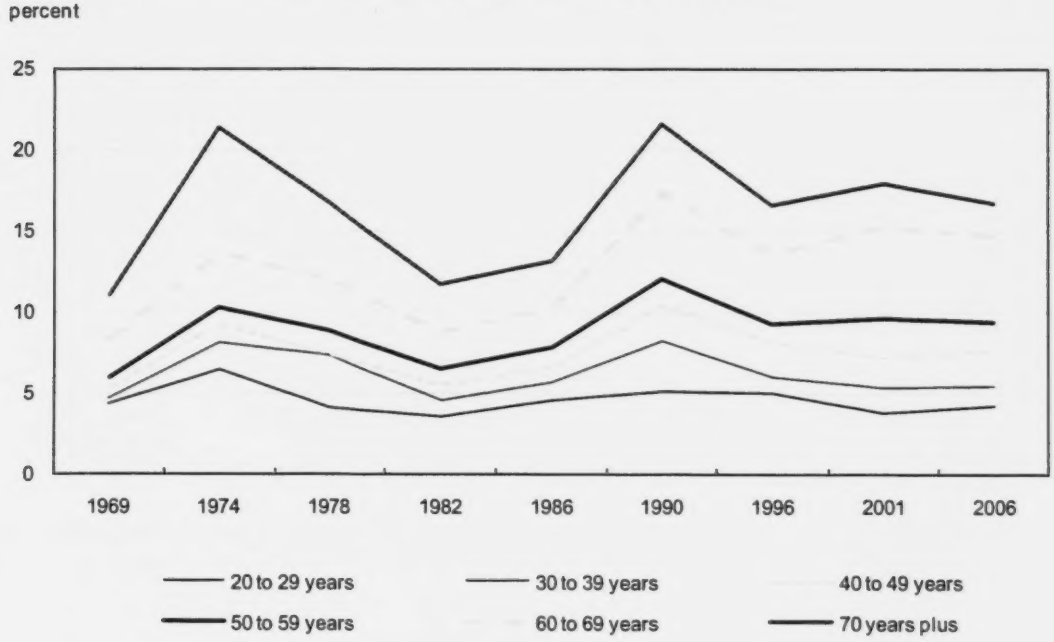


Chart 10
Homeowners income ratio, 70-plus to 40-to-49 age classes, 1969 to 2006

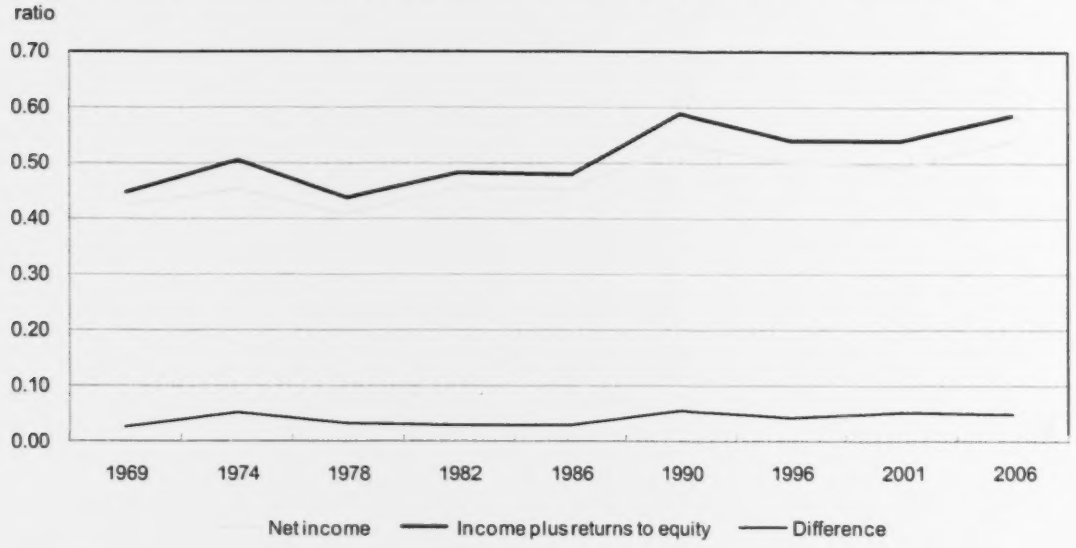


Chart 11
Homeowners income ratio, 70-plus to 50-to-59 age classes, 1969 to 2006

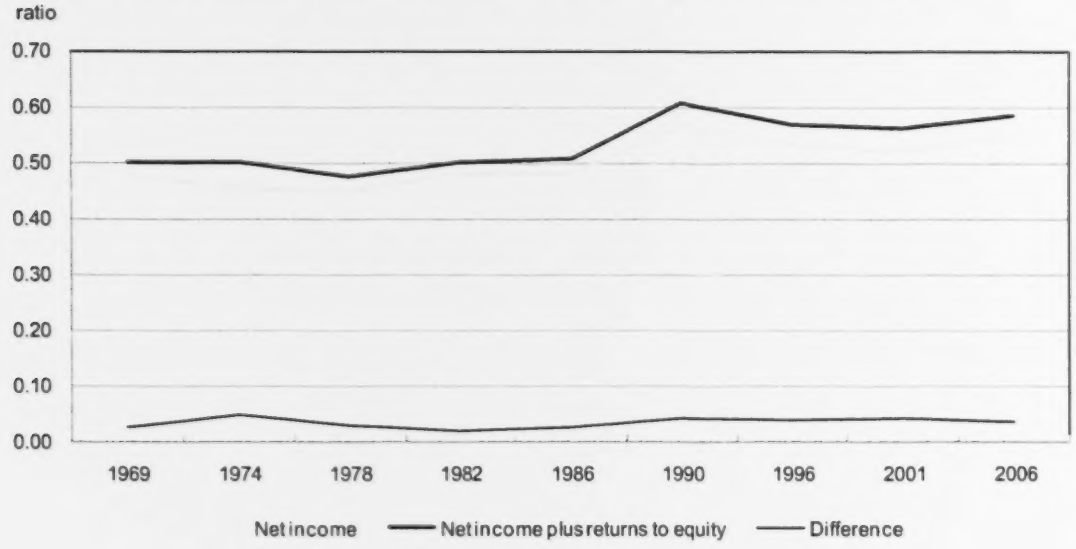


Table 7
Average net annual household income and returns to equity for all households, adjusted for household size, by age class, 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					dollars				
Panel A: Returns to equity									
20 to 29	40	99	137	172	216	312	464	175	436
30 to 39	100	340	395	474	629	1,135	978	689	1,253
40 to 49	142	489	589	729	1,035	2,033	1,661	1,253	2,075
50 to 59	165	599	769	917	1,331	2,709	2,240	1,798	3,235
60 to 69	174	631	790	956	1,416	3,375	2,570	2,089	3,798
70 plus	147	561	730	797	1,029	2,464	2,252	1,781	3,343
Panel B: Net income plus returns to equity									
					dollars				
20 to 29	4,139	6,832	9,705	14,180	15,683	21,325	21,464	22,857	28,599
30 to 39	3,976	7,374	10,318	15,328	17,851	23,841	25,327	29,620	35,704
40 to 49	4,282	7,740	10,661	16,503	20,553	27,273	28,131	30,675	37,256
50 to 59	4,370	8,365	11,377	17,170	21,360	29,759	29,495	33,672	42,002
60 to 69	3,751	6,878	9,324	14,073	18,079	26,651	25,228	26,000	34,539
70 plus	2,675	4,978	6,880	11,182	13,560	19,748	21,055	22,564	29,397
					ratio				
70 plus: 40 to 49	0.62	0.64	0.65	0.68	0.66	0.72	0.75	0.74	0.79
70 plus: 50 to 59	0.61	0.60	0.60	0.65	0.63	0.66	0.71	0.67	0.70

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

Table 8
Average net annual household income and returns to equity for homeowners, adjusted for household size, by age class, 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					dollars				
Panel A: Returns to equity									
20 to 29	173	554	420	556	792	1,375	1,346	1,080	1,587
30 to 39	184	604	593	715	1,049	2,135	1,638	1,774	2,180
40 to 49	229	704	786	923	1,405	2,953	2,403	2,482	3,048
50 to 59	272	885	1,016	1,174	1,752	3,658	2,922	3,551	4,196
60 to 69	334	1,015	1,121	1,289	2,003	4,578	3,491	4,179	5,098
70 plus	317	1,133	1,115	1,318	1,899	4,627	3,508	4,325	4,950
Panel B: Net income plus returns to equity									
					dollars				
20 to 29	4,124	9,104	10,814	16,552	18,286	28,438	28,417	29,782	38,600
30 to 39	4,065	8,085	10,787	16,406	19,359	27,586	28,899	34,504	42,236
40 to 49	4,432	8,167	11,255	17,456	22,421	31,212	31,534	35,948	42,931
50 to 59	4,579	9,265	12,041	18,691	23,626	33,266	33,350	39,026	47,134
60 to 69	4,058	8,095	9,908	15,441	20,608	30,021	28,289	30,339	39,584
70 plus	2,996	6,180	7,411	12,066	15,446	25,291	23,555	27,184	33,402
					ratio				
70 plus: 40 to 49	0.68	0.76	0.66	0.69	0.69	0.81	0.75	0.76	0.78
70 plus: 50 to 59	0.65	0.67	0.62	0.65	0.65	0.76	0.71	0.70	0.71

Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

6 Conclusion

This paper estimates the implicit income generated by the home equity of working-age and retirement-age households over the period 1969 to 2006. It examines the evolution of incomes over time and the contribution of home equity to household income. This particular time period saw the creation of the modern pension system in Canada and significant changes in the economic climate with regard to growth, inflation, and house prices.

With data from the Survey of Household Spending and its predecessor, the Survey of Family Expenditures, it is found that there has been a gradual increase in the economic well-being of retirement-age households relative to working-age households. Not accounting for home equity, the paper finds that, from 1969 to 2006, the ratio of income of the retirement-age population to the income of the 40-to-49 age class of the working-age population increased by 15 percentage points, while the income of the retirement-age population relative to the 50-to-59 age class of the working-age population increased by 8 percentage points.

During this period, Canadians invested in housing assets that provided additional income upon retirement, and this additional income contributed significantly to well-being. The implicit source of earnings from investments in housing increases income for the 60-to-69 age group by over 13% on average. Moreover, this percentage increase has gone up over time. Taking into account returns to equity further reduced the income gap between the elderly and working-age groups over the period.

Canadians, supported by housing policies that facilitated home purchases, have continued to invest steadily in home ownership over their lifetimes. Home ownership provides a significant financial benefit, particularly for older, retirement-age households. Over an almost four-decade span, retirement incomes have increased relative to the incomes of working-age cohorts. The implicit income from home ownership has at least kept pace. As such, the income gap between retirement-age and working-age households narrowed even further due to home ownership.

Appendix 1 – Gross and net average annual income by age class

Text table 1
Average gross and net annual household income by age class, 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					dollars				
Panel A: Gross income									
20 to 29	7,835	12,309	17,806	25,207	29,371	39,750	41,082	43,872	52,400
30 to 39	9,155	16,236	22,889	32,889	39,059	51,180	55,351	65,053	76,499
40 to 49	10,188	17,850	24,769	37,146	47,104	61,751	64,096	69,354	83,673
50 to 59	8,945	16,918	22,547	33,909	43,308	59,269	59,921	69,156	85,777
60 to 69	6,333	11,365	14,448	22,403	28,435	42,406	41,456	43,774	54,620
70 plus	3,608	6,355	8,676	14,528	17,571	26,251	28,402	31,375	40,399
					ratio				
70 plus: 40 to 49	0.35	0.36	0.35	0.39	0.37	0.43	0.44	0.45	0.48
70 plus: 50 to 59	0.40	0.38	0.38	0.43	0.41	0.44	0.47	0.45	0.47
					dollars				
Panel B: Income net of income taxes									
20 to 29	6,825	10,437	14,897	21,301	24,308	31,871	33,692	35,938	43,506
30 to 39	7,989	13,258	18,716	27,096	31,447	39,991	43,715	49,468	60,385
40 to 49	8,796	14,677	20,455	30,557	37,776	47,221	49,414	53,975	65,779
50 to 59	7,789	13,969	18,691	27,981	34,825	46,132	46,906	54,065	67,553
60 to 69	5,634	9,582	12,634	19,380	24,334	34,257	33,616	35,795	45,348
70 plus	3,421	5,796	8,151	13,269	15,841	22,164	24,217	26,471	34,676
					ratio				
70 plus: 40 to 49	0.39	0.39	0.40	0.43	0.42	0.47	0.49	0.49	0.53
70 plus: 50 to 59	0.44	0.41	0.44	0.47	0.45	0.48	0.52	0.49	0.51
					dollars				
Panel C: Income net of income taxes and employment contributions[1]									
20 to 29	6,475	9,964	14,138	20,239	23,005	30,101	31,572	33,428	40,410
30 to 39	7,562	12,571	17,699	25,594	29,486	37,472	40,682	45,940	55,816
40 to 49	8,311	13,903	19,400	28,892	35,500	43,981	45,836	50,032	60,639
50 to 59	7,352	13,167	17,696	26,543	32,829	43,285	43,468	49,960	62,214
60 to 69	5,390	9,137	12,190	18,631	23,556	33,064	32,395	33,398	43,098
70 plus	3,368	5,713	8,050	13,131	15,523	21,665	23,837	26,017	33,803
					ratio				
70 plus: 40 to 49	0.41	0.41	0.41	0.45	0.44	0.49	0.52	0.52	0.56
70 plus: 50 to 59	0.46	0.43	0.45	0.49	0.47	0.50	0.55	0.52	0.54

1. Includes pension plan contributions and contributions to employment insurance.
Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

Text table 2
Average gross and net annual household income adjusted for household size, by age class, 1969 to 2006

	1969	1974	1978	1982	1986	1990	1996	2001	2006
					dollars				
Panel A: Gross income									
20 to 29	4,977	8,324	12,072	17,473	19,765	27,825	27,413	29,589	36,642
30 to 39	4,714	9,106	12,886	19,157	22,901	31,106	33,232	40,063	47,277
40 to 49	5,090	9,301	12,901	20,328	25,954	35,519	37,027	40,667	48,381
50 to 59	5,137	9,983	13,532	20,782	26,350	37,077	37,619	43,744	53,400
60 to 69	4,194	7,719	10,081	15,698	19,990	29,645	28,878	30,814	38,671
70 plus	2,687	4,881	6,587	11,442	14,067	20,747	22,273	24,695	30,879
					ratio				
70 plus: 40 to 49	0.53	0.52	0.51	0.56	0.54	0.58	0.60	0.61	0.64
70 plus: 50 to 59	0.52	0.49	0.49	0.55	0.53	0.56	0.59	0.56	0.58
					dollars				
Panel B: Income net of income taxes									
20 to 29	4,321	7,053	10,086	14,743	16,348	22,253	22,425	24,347	30,348
30 to 39	4,096	7,422	10,500	15,733	18,375	24,246	26,172	31,074	37,251
40 to 49	4,383	7,658	10,626	16,691	20,768	27,133	28,532	31,759	38,145
50 to 59	4,458	8,244	11,207	17,135	21,237	28,820	29,405	34,392	42,070
60 to 69	3,733	6,544	8,834	13,623	17,178	24,065	23,461	25,402	32,251
70 plus	2,563	4,471	6,217	10,483	12,750	17,630	19,073	21,079	26,649
					ratio				
70 plus: 40 to 49	0.58	0.58	0.59	0.63	0.61	0.65	0.67	0.66	0.70
70 plus: 50 to 59	0.57	0.54	0.55	0.61	0.60	0.61	0.65	0.61	0.63
					dollars				
Panel C: Income net of income taxes and employment contributions[1]									
20 to 29	4,099	6,733	9,568	14,008	15,467	21,013	21,000	22,682	28,163
30 to 39	3,876	7,034	9,923	14,854	17,222	22,706	24,349	28,931	34,451
40 to 49	4,140	7,251	10,072	15,774	19,518	25,240	26,470	29,422	35,181
50 to 59	4,205	7,766	10,608	16,253	20,029	27,050	27,255	31,874	38,767
60 to 69	3,577	6,247	8,534	13,117	16,663	23,276	22,658	23,911	30,741
70 plus	2,528	4,417	6,150	10,385	12,531	17,284	18,803	20,783	26,054
					ratio				
70 plus: 40 to 49	0.61	0.61	0.61	0.66	0.64	0.68	0.71	0.71	0.74
70 plus: 50 to 59	0.60	0.57	0.58	0.64	0.63	0.64	0.69	0.65	0.67

1. Includes pension plan contributions and contributions to employment insurance.
Sources: Survey of Family Expenditures (1969 to 1996) and Survey of Household Spending (2001 to 2006).

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